

# The effect of information framing on charitable behaviour

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## ABSTRACT

This research examines the effect of information framing on the charitable behaviour of students from the Eindhoven University of Technology (TU/e). The scope of this research focuses on the Dutch ‘nierstichting’, which is a charity for kidney diseased. Two types of information framing are examined: empathy oriented and solution oriented. While the content differed, the format stayed consistent: a 30 sec. video. Within two homogeneous groups ( $n_1 = 21$ ;  $n_2 = 20$ ) there was found a significant difference in charitable behaviour. Group 2, who saw the solution oriented video, donated significantly more often. However there was no significant difference in the average donated amount between groups. Furthermore, no significant difference in perceived empathy- or solution-based level was found between the researched groups. While the videos were not perceived as intended, they did influence the charitable behaviour of the participants. Further research is needed to determine the cause of this behaviour change.

## Author Keywords

Donating, Charity, Information Framing, Generation Z.

## INTRODUCTION

Non-profit organizations receive revenue from a host of sources including voluntary donations, government grants, fees, investment income, rents and sales of commodities (Khanna, Posnett, & Sandler, 1995). Ranganathan and Henley (2008) reported that charities need to rely on individual donors and less on government for revenue. Charities have different strategies to encourage charitable behaviour. Their repertoire consists of written messages (letters, posters), and verbal messages (radio, tv, etc.). Charities use these methods to provoke altruistic behaviour.

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But which strategy is the most effective for a charity with a certain set of characteristics in this era? Currently, most charities use emphatically loaded messages to trigger charitable behaviour (Hudson, 2013). However, the youngsters of today, have a higher level of narcissism, and less empathic feelings, in comparison to their parents when they were the same age (Stein, 2013). Soon our society, and so the charities, will rely on this current group of youngsters, who might be lacking empathy and therefore charitable behaviour. Several studies investigated the power of reframing information to stimulate a specific behaviour, state of mind or emotion. The goal of this research is to answer the following question: *“To what extent does information reframing effect charitable behaviour of TU/e students, in relation to the ‘nierstichting’?”* Within the two homogeneous groups there is found a significant difference in charitable behaviour between groups. Moreover, there is a difference in average donated money between groups as well. However this trend needs to be further invested to proof it.

## THEORETICAL BACKGROUND

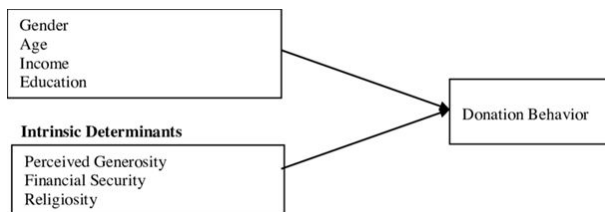
This paper makes use of the dictionary descriptions for charity and charitable behaviour. The dictionary of Oxford defines charity as *“An organization set up to provide help and raise money for those in need”*. And charitable behaviour as *“Behaviour relating to the assistance of those in need”*.

## Influences Charitable Behaviour

Noor et al. (2015), states that the variables affecting charitable behaviour of the individual could be classified into extrinsic and intrinsic determinants. The extrinsic is about demographic (gender, age) and socio-demographic (income, education) profiles, Where intrinsic determinants address the underlying psychographic factors (financial security, religiosity) for donating.

In 1997, a research has been conducted to determine different intrinsic and extrinsic determinants that influences charitable behaviour in Britain. Income, education, perceived generosity, and religiosity significantly affect charitable behaviour (Schlegelmilch et al., 1997). According to Dvorak and Toubman (2013) gender is an important variable for charitable behaviour as well. Schnepf (2008) found out that women are more likely to donate to charities, but men are more generous in terms of the amount given. Schnepf (2008) argues that men will give more

donations than female for religious organisations, while Kasri (2013) states that there is no difference in charitable behaviour between men and women. There is a positive relationship between age and charitable behaviour (Bekkers & Wiepking, 2011). Older generations still make the largest donations (Fritz, 2013). While, there is a positive relationship between income and charitable behaviour, it is not necessarily true that those people donate to charities. Stern (2013) found out that wealthy people prefer to donate more to universities, arts, and museums, while the poor tend to donate on religious organisations. Furthermore, Kasri (2013) found a positive relationship between the level of education and the intention to donate to charities. However, Wiepking (2011) mentions that there is a negative relationship between level of education and charitable behaviour in Taiwan and Korea. Moreover, some studies proposed the financial security as a good indicator for intrinsic variable (Kasri, 2013). But, there is no evidence stating that individuals who regarded themselves as financially secured or not worried about their financial status are more likely to donate (Schlegelmich, 1997; Lwin, 2013). In addition, the most important factor is religion, this is due to the fact that it significantly influences human attitudes, values and culture. (Kasri, 2013;) Whereby, all religions have the same positive attitude towards charitable giving. This can be explained due to the fact that they all promise a better life after death, whether it is in your next life or in the hereafter. Noor et al. (2015), used the aforementioned statements to shape a conceptual framework, figure 1. This framework will be used as a fundamental basis in this study.



**Figure 1. Determinants for Donation Behaviour**

Nevertheless, the line between greed and charity can be a very thin. What started as a good act can be turned into a sin, when one gives to gain money, reputation, or whatsoever. Greed can be seen as an extension of the survival instinct, securing enough resources to overcome difficult times. (Vries, 2016) In general, the research agrees that giving money to people who are less fortunate, is considered as a charitable gesture, regardless of the underlying reason.

### **Empathy vs. Solution-based**

Currently, most charities use emphatically loaded messages to trigger charitable behaviour (Hudson, 2013). This paper

defines empathy according to Batson (1991) “*a cognitive capacity for imagining the emotional states of others*”.

Generation Z, sub-part of the millennials, have less empathic feelings, compared to their parents when they were the same age (Stein, 2013). Some experts already talk about the me-generation. At the same time, the proportion of needy elderly humans within the society continues to increase (csb, 2015). Soon our society will be dependant on this current group of

youngsters, who might be lacking empathy and therefore the tendency for charitable behaviour. The question arises whether other incentives can be used for charitable behaviour.

One of the most important aspect of being an engineer is to think about tomorrow's future. (Eindhoven University of Technology, n.d.) Engineers are engaged with today's problems, searching for possible solutions and innovations. Resulting in a solution-oriented mindset.

### **RELATED WORK**

Framing refers to the presentation of information. One of the most famous examples is labeling a glass of water ‘half empty’ or ‘half full’. Understanding framing effects can help charities get higher revenues, government (elections), advertisement agencies and experimental designers. Moreover, it shows to some degree the illusion of the free will. Over the last past years, some framing tactics emerged, such as foot-in-the-door technique (Sagarin) and framing-anchoring techniques (Cheng, Wu, 2011). However, more research can be done on the influence of information framing on charitable behaviour.

Former research shows that charitable behaviour can be enhanced by reframing the information. One of the findings is that charities should focus on creating guilt, and use statistics instead of an individual story to enhance charitable behaviour. (Duyse, 2012) According to Banks et al., (1995) negative information is more attention-grabbing and persuasive than positive information. Another study shows that in addition to message framing, image valence with vivid pictures presentation was found to be influential in charity advertising (Chang, et al., 2009).

### **METHODOLOGY**

During this research, a specific relation was examined, namely the relation between information framing and charitable behaviour. Normally, contextual influences shape and form participant behaviour. These influences might obstruct the ability to properly conclude the relation, leading to a conclusion with a high degree of certainty (Koskinen et al., 2011). To rule out other influential factors, all factors were kept equal over the course of this research. The recruitment of the participants was equal: single students studying on a flexible workspace. This was required to prevent the influence of collaborating team

members, or other students working nearby. When approaching the participants, the researchers used an equal introduction talk to prevent pre-research biases. The research was conducted using an iPad, which was used with every participant.

### **Intervening Variables**

In order to specify a causal relation between two variables, one needs to eliminate all possible intervening variables. In this research the different forms of information framing will function as the independent variable. We want to examine whether the different forms of framing will provoke different charitable behaviours. In this case we will measure charitable behaviour in the amount of donated money in euros. Therefore, the donated amount of money will function as dependent variable. To eliminate intervening variables, which may influence the charitable behaviour of the participants (intrinsic and extrinsic), both research groups need to be homogenous. The experiment will be conducted at the University of Eindhoven, implying that all participants have the same level of education, and age group (namely generation Z). In order to make sure that there is no charitable behaviour difference between departments the participants are asked to fill in their study. Moreover, the participants were required to fill in several questions about their gender, religion, and income. The research does not make a distinguishing between the different religions, but between non-religious and religious people. All religions have the same positive attitude towards charitable giving. This can be explained due to the fact that they all promise a better life after death, whether it is in your next life or hereafter. Since, most students have a standard income, whether it comes from a part-time job, their parents or loan, monthly income and financial security is no relevant question for this specific group. Therefore, the research took a look at both the money the participants can spend freely each month, and how important money is to them. The perceived generosity is been asked with the open question, which asks the participant their specific reason to donate. All these variables, gender; religion; money, are labeled as control variables for this research.

### **Examined Relations**

If, and only if, both groups are proved to be homogeneous claims can be made about the relation between our independent and dependent variables. The independent variable 'information framing' will exist of two different videos, which will be part of our prototype. Those who see video 1 will be categorized as group 1 and those who see video 2 will be categorized as group 2. Based on the responses for the control variables of both category groups it can be examined whether there is homogeneity between both groups. If so, control variables such as gender, religion, etc. do not influence the responses of the category group. Analyzing the dependent variable 'charitable behaviour' within two homogeneous groups will provide

insights upon the research question: *"To what extent does information reframing effect charitable behaviour of TU/e students, in relation to the 'nierstichting'?"*

Based on the characteristics of Generation Z and TU/e students it is expected that emphatically oriented information framing will not lead to charitable behaviour of TU/e students. For our participant it is expected that more solution oriented information framing will lead to more charitable behaviour. By answering the questions: *"To what extent can a 30 sec video influences ones' empathy level by showing a suffering patient and his children?"* and *"To what extent can a 30 sec video influences ones' solution by showing a clear plan and experts?"* it can be concluded whether the videos are perceived as intended.

To confirm if these perceptions correlate with one's charitable behaviour, two extra research questions are formulated: *"Is there a relation between perceived empathy level and charitable behaviour of TU/e students, in relation to the 'nierstichting'?"* and *"Is there a relation between perceived solution level and charitable behaviour of TU/e students, in relation to the 'nierstichting'?"*.

### **Role Prototype**

During this lab research, the prototype is used as experimental component. In other words, this means that the examined relation is researched by small variances within the prototype e.g. interactive lamp behaviour, camera interfaces. (Wensveen, 2018) In this case, this relates to the framing of the information communicated through videos. As the prototype is used as an experimental component, there will be a strong focus on acquiring quantitative data with a statistical follow-up analysis (Rodgers et al., 2015).

### **PROTOTYPE**

In order to test the hypothesis, a vending machine was designed. Normally, A vending machine is considered as big noisy food dispenser. As our targeted generation is critical, it was key to match the vending machine to this generation. In order to achieve this, an abstract view was taken upon the definition of a vending machine: a trade: a certain service in exchange for owned value. In this rapidly digitizing world, a phone/tablet can be considered as the vending machine of the twenty-first-century, offering a service in exchange of money, or time. During this research, A digital charity donation form was created in Google Forms, matching the preferred communication medium of the examined population (Ozkan & Solmaz, 2015). The research was conducted using an iPad, which was used with every participant.

In order to test the effect of information framing, two extremely similar questionnaires were made using the same structure. First a charity advertisement video for the 'nierstichting' was shown, followed by the question *"How much would you donate?"*. The participants could select

one of the following options: “€0.00; €0.25; €0.50; €1.00; €2.00; €3.50; €5.00”. The prototype was designed to create the illusion of a legit donation.

The only difference between the two questionnaires was shown in the video’s information framing trough video and audio, the length of the two videos was equal.

The first video had a strong focus on evoking empathy, visually showing a patient suffering from nephrology and his children (see figure 2). Also, the voice over of the video has an emphatic focus as the narrator emphasizes the patients limitations to see his family (see table 1). The second video focuses on being solution-based. The video shows a clear plan, the development of an artificial kidney, and experts (see figure 3), the narrator emphasizes on this as well (see table 1).

After the possible donation was completed, the participants were guided to a questionnaire. In this questionnaire we asked the participants about their interpretation of the video, in order to be able to validate whether the videos were perceived as intended. In order to validate this, four different questions with a seven-point-likelihood scale were used. During the research, the left (1) side was defined negatively, as “Not at all”. The right (7) side was defined positively, as “Yes, Definitely” or “It helps a lot”.

To test the homogeneity of both category groups, five questions were asked with relation to the participants’ extrinsic (gender, income, study) and intrinsic (religion, importance of money) values. At the end, there was one open question were participants could enter other donation motivations. This option was added to be able to better understand personal circumstances or emotional factors (e.g. a participants’ relative suffering from nephrology).

Empathy (video 1)	Solution (video 2)
<p><i>“Een dialyseapparaat is groots, het houdt je in leven. Maar je zal er maar aan vast zitten. Aan dat enorme ding, 40 uur per week.”</i></p>	
<p><i>“Dat is loodzwaar, En de gevolgen zijn enorm.”</i></p>	<p><i>“Daarom heeft de Nierstichting grote ambities.”</i></p>
<p><i>“Je wordt voor het leven getekend door deze ziekte. Dagelijkse activiteiten worden verhinderd, tijd doorbrengen met het gezin is niet meer mogelijk.”</i></p>	<p><i>“De eerste tests zijn veelbelovend, we zijn dichtbij het publiekelijk beschikbaar maken van een klein en draagbare kunstnier.”</i></p>
<p><i>“Samen krijgen we de nierziekte klein. Met uw bijdrage, hoe klein ook, maken we de wereld van nierpatiënten weer groot.”</i></p>	

**Table 1. Information framing difference (narration)**



**Figure 2. Empathy based (video 1), relatives**



**Figure 3. Solution based (video 2), experts and solutions**

## ANALYSES AND INSIGHTS

As the validity of the research depends on the homogeneity of the groups, this was initially examined. After the group homogeneity was ensured, all relevant relations with regard to the research were analyzed..

### Homogeneous Groups

To determine whether both category groups are homogeneous we analyze three nominal control variables: ‘Gender’, ‘Religion’, and ‘Study’ and compare them for both category groups ‘Video 1’ and ‘Video 2’.

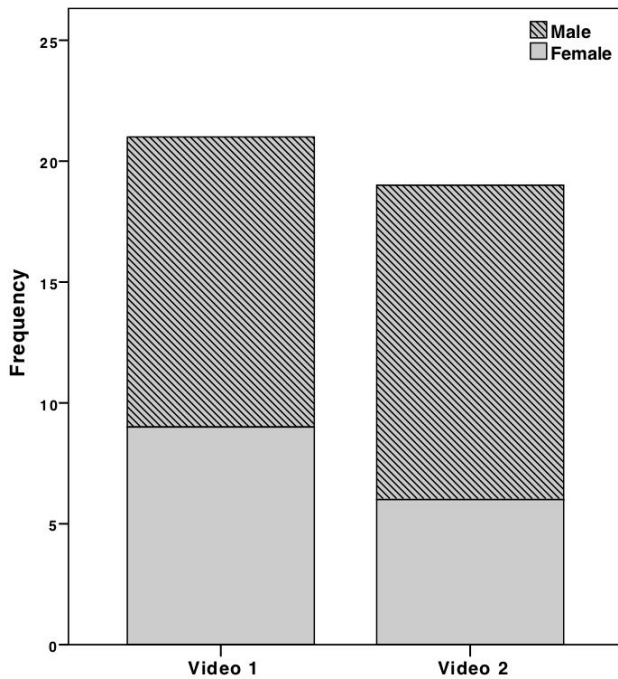


Figure 4. Barchart, Video\*Gender

The barchart shown in figure 4 shows the similarities in gender of both category groups.

To research the nominal variable ‘Religion’; the following question was asked “*Are you religious?*”. Participants could select the following answers “*Yes, definitely; Kind of; No, not at all*”. Figure 5 shows a Barchart of the given answers, from this it can be concluded that ‘Religion’ is nearly homogeneous for both category groups.

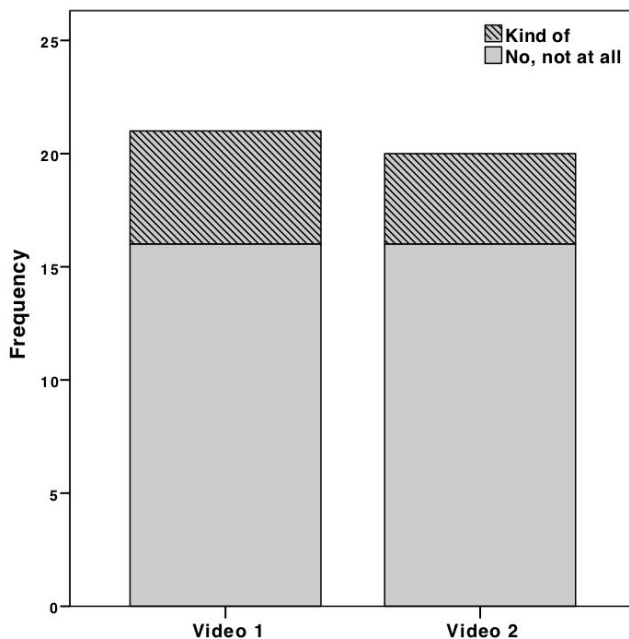


Figure 5. Barchart, Video\*Religion

To research the nominal variable ‘Study’; the following question was asked “*At which department do you study?*”. Participants could select one of the nine departments of the TU/e, given answers are visualized in Figure 6. From this it can be concluded that the amount of Industrial Design students is similar for both groups. For research purposes the respondents group in group 1 of which the study is unknown, is expected to be spread similar in study as the known respondents in group 2. Therefore we assume both groups are fairly homogeneous with respect to ‘Study’.

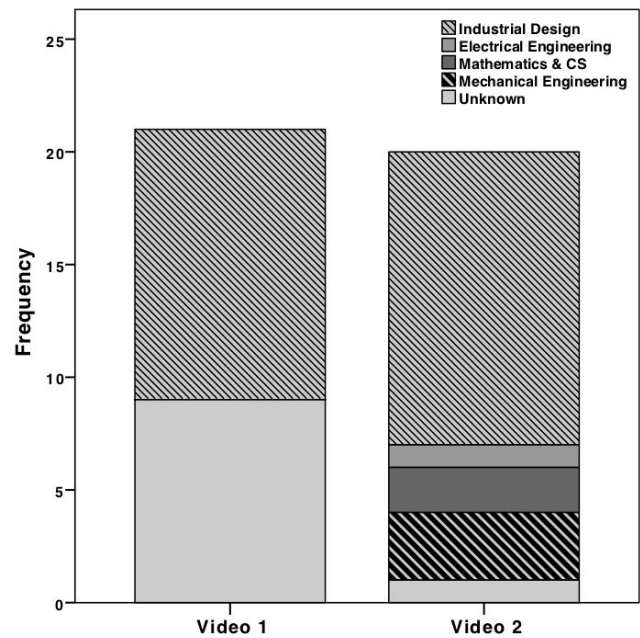


Figure 6. Barchart, Video\*Study

In order to analyze the variable ‘Income’ we asked: “*How much money per month can you spend freely?*” and “*How important is money to you?*” The answer options for the first questions ranged from ‘€0-€50’ to ‘€300+’, thereby creating an ordinal variable we call ‘Money to spend’. The second question is asked on a seven-point-likelihood scale, where ‘1 = Not important at all’ and ‘7 = Really important’, which led to the ordinal variable ‘Importance money’. To analyze these variables a Mann-Whitney U test is conducted, since all the criteria are met within this research:

- Dependent variable is measured at an ordinal level.
- The independent variable consists of 2 categorical, independent groups.
- The groups are ‘observed’ independently

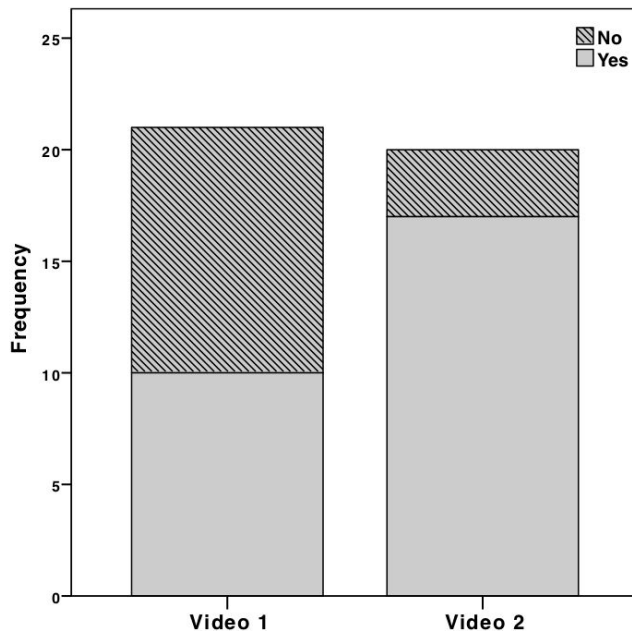
	Money to spend	Importance money
<i>Mann-Whitney U</i>	175,500	144,000
<i>Wilcoxon W</i>	406,500	354,000
<i>Z</i>	-.668	-1,803
<i>Asymp. Sig. (2-tailed)</i>	.504	.071

**Table 2. Mann-Whitney U , video\*money**

The null-hypothesis is defined, as follows:  $H_0$ : Both category groups are homogeneous. For all statistical analyses in this research a 95% confidence interval is used. Therefore all p-values larger than 0.05 will be interpret as non-significant results. If this is the case the null-hypothesis shall not be rejected. Table 2 shows p-values for ‘Money to spend’ and ‘Importance Money’, since both are not significant ( $p_1 = .504$  &  $p_2 = .071$ ) the null-hypothesis shall not be rejected. And thus both groups are homogeneous for both ‘Money to spend’ and ‘Importance Money’.

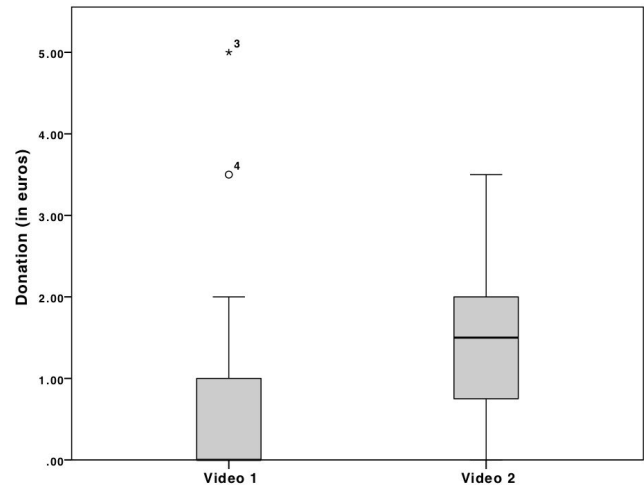
#### Video < > Charitable behaviour

To see whether the charitable behaviour is significantly different for both groups we use the nominal variable ‘Donate’ and ‘Video’. In group 1 (with video 1) 10 out of 21 people donated, in group 2 (with video 2) 17 out of 20 people donated.



**Figure 7. Barchart, Video\*Donate**

Since both variables consist of only two categories a two-sided Fisher's Exact Test was conducted. The results show a statistically significant difference between groups ( $p = .020$ ) This means that the charitable behaviour is significantly different between those who've seen video 1 and those who've seen video 2. From figure 7 it can be concluded that video 2 (the solution-based video) led to more donations.



**Figure 8. Box Plots, Video\*Donation**

To determine whether the donated amount differs per group inferential statistics is applied on the Nominal variable ‘video’ (video 1; video 2) is compared with the ratio variable ‘Donation’ (€0.00; €0.25; €0.50; €1.00; €2.00; €3.50; €5.00). The calculated mean for group 1 is €0,88 (Std. Deviation 1.350), compared to a mean of €0.45 (Std. Deviation 1.025) for group 2. Figure 8 shows two boxplots of the variable donation for both groups. To see whether this difference is significant a two tailed T-test is conducted.

The upper row of table 3 calculates with ‘equal variances assumed’, the other row uses ‘no equal variances assumed’. According to Levene's Test for Equality of Variances.  $p = .531$  ( $F = .400$ ). Therefore equal variances can be assumed in our t-test for Equality of Means.

t	df	Sig .	Mean Difference	Std. Error Difference
-1.514	39.00	.138	-.569	.376
-1.525	37.19	.136	-.569	.373

**Table 3. Independent Samples Test, Donation\*video**

As determined by an independent sample test with equal variances assumed, there is no significant difference in donation ( $p = .138$ ). This means that (while the means and

boxplots differ) those who've seen video 2 do not donate significantly more than those who've seen video 1.

**Video < > Empathy Level**

To test whether the perceived empathy level differed between groups the answers of “Were you able to place yourself in the shoes of the kidney diseased?” and “Can you imagine how the kidney diseased will feel?” were analyzed. These answers to these questions are given in a seven-point-likelihood scale. For convenience, we named these ordinal variables ‘In his shoes’ and ‘Feeling’.

As determined by Mann-Whitney U (table 4) there is no statistically significant difference in perceived empathy level between groups (p = .968 & p = .650). This means that the perceived empathy level is similar for those who've seen video 1 and those who've seen video 2.

	In his shoes	Feeling
<i>Mann-Whitney U</i>	208.500	193.000
<i>Wilcoxon W</i>	439.500	403.000
<i>Z</i>	-.040	-.454
<i>Asymp. Sig. (2-tailed)</i>	.968	.650

**Table 4. Mann-Whitney U , video\*Empathy\_oriented**

By treating the ordinal data as interval, one can calculate a mean. Since the difference between values is undefined for ordinal data, these calculated numbers have no actual meaning. However the means, as shown in table 5, can be used to compare both groups. Based on this it can be concluded that the perceived empathy level is close to 3 and therefore neutral for both groups, according to both question-answers.

		N	Mean	Std. Deviation
<b>In his shoes</b>	<i>video 1</i>	21	3.33	1.494
	<i>video 2</i>	20	3.45	1.701
<b>Feeling</b>	<i>video 1</i>	21	3.48	1.750
	<i>video 2</i>	20	3.30	2.055

**Table 5. Descriptives , video\*Solution\_oriented**

**Video < > Solution-based Level**

To test whether the perceived solution-based level differed between groups the answers of “How much do you think the presented plan contributes to the solution?” and “Do you think this charity is solution-based?” were analyzed. These answers to these questions are given in a seven-point-

likelihood scale. For convenience, we named these ordinal variables ‘Plan’ and ‘Solution’.

As determined by Mann-Whitney U (table 6) there is no statistically significant difference in perceived solution-based level between groups (p = .140 & p = .216). This means that the perceived solution-based level is similar for those who've seen video 1 and those who've seen video 2. However the difference between groups is bigger than the difference in empathy level (p = .968 & p = .650).

	Plan	Solution
<i>Mann-Whitney U</i>	155.000	164.000
<i>Wilcoxon W</i>	386.000	395.000
<i>Z</i>	-1.475	-1.237
<i>Asymp. Sig. (2-tailed)</i>	.140	.216

**Table 6. Mann-Whitney U , video\*Solution\_oriented**

By treating the ordinal data as interval again means can be calculated to compare both groups. Based on the means, as shown in table 7, it can be concluded that the perceived solution-based level is a bit higher than the perceived empathy level for both groups, according to both question-answers. Furthermore, although not significant, the solution-based level is perceived higher for group 2, for both variables.

		N	Mean	Std. Deviation
<b>Plan</b>	<i>video 1</i>	21	4.43	1.805
	<i>video 2</i>	20	5.30	.979
<b>Solution</b>	<i>video 1</i>	21	4.62	1.244
	<i>video 2</i>	20	5.10	1.119

**Table 7. Descriptives , video\*Solution\_oriented**

**Empathy Level < > Charitable behaviour**

To see whether there is a relation between perceived empathy level and charitable behaviour a dummy variable is created. This variable ‘Empathy oriented’ is the sum of ‘In his shoes’ and ‘Feeling’ and ranges from 2 to 14. This ordinal variable is compared to the ratio variable ‘Donation’ (€0.00; €0.25; €0.50; €1.00; €2.00; €3.50; €5.00), which represents charitable behaviour. Figure 9 shows a scatter plot of both variables, implying a positive correlation. Since both variables are at least ordinal a Spearman rank

correlation is used to measure the degree of association between both variables.

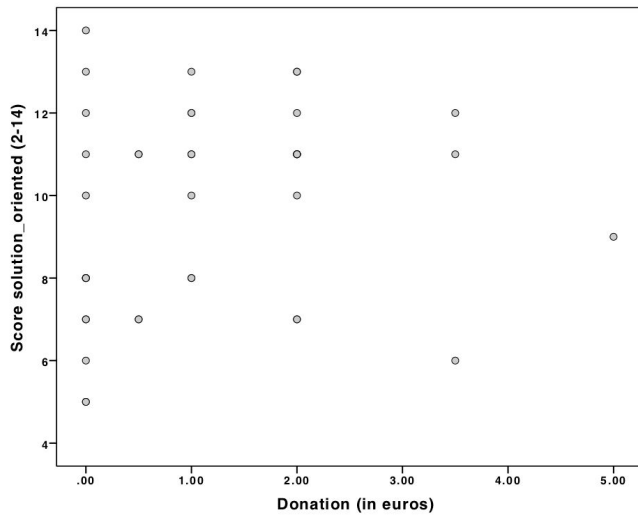


Figure 9. Scatter Plot, Empathy\_oriented\*Donation

According to a two-tailed Spearman's rank correlation there is a statistically significant moderate, positive correlation between perceived empathy level and donation ( $r_s = .433$ ,  $p = .005$ ). This means that those who perceive a higher empathy level are more likely to donate a higher amount.

**Solution-based Level <> Charitable behaviour**

To see whether there is a relation between perceived solution-based level and charitable behaviour a dummy variable is created. This variable 'solution oriented' is the sum of 'Plan' and 'Solution' and ranges from 2 to 14. This ordinal variable is compared to the ratio variable 'Donation' (€0.00; €0.25; €0.50; €1.00; €2.00; €3.50; €5.00), which represents charitable behaviour. Figure 10 shows a scatter plot of both variables, implying a slightly positive correlation.

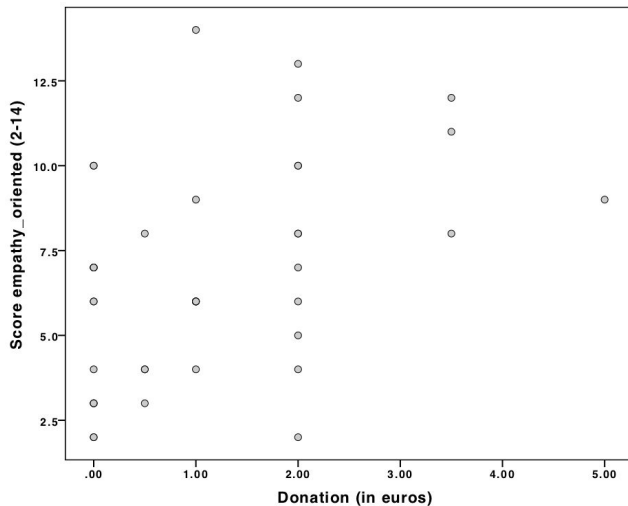


Figure 10. Scatter Plot, Solution\_oriented\*Donation

According to a two-tailed Spearman's rank correlation there is a not statistically significant weak, positive correlation between perceived solution-based level and donation ( $r_s = .248$ ,  $p = .118$ ). This means that those who perceive a higher solution-based level are not necessarily more likely to donate a higher amount.

**DISCUSSION**

Despite the fact that the research shows a difference in the interpretation of the videos, the relation to the projected video focus and its interpretation is insignificant. Both the interpretation of the intended emphatic and solution-based videos were insignificant. As a result, the found differences in participant behaviour does relate to a difference within the videos, but the research is unable to specify the differences. The mentioned difference in interpretation does tend to the intention of the videos. For future research, it would be valuable to test the interpretation of the videos prior to the research. Preventing succeeding researches from concluding in a difference in donating behaviour caused by an unproven difference in video focus.

As the behaviour of participants can be influenced emotionally, for example by relatives suffering from nephrology. The participants were able to freely indicate this qualitatively. A thematic analysis (Boyatzis, 1998) was conducted upon the results of this question. Within the first group of participants, which saw the solution-based video, there were two participants who had a personal motivation to donate. This was concluded from the answers "*Personal reasons – I know people that suffer from this illness*" and "*Because my uncle has a kidney disease. I know how difficult it can be.*" on the question "*why did you choose to donate?*" which could have influenced the research. Also, it can be debated whether the general trust in charities influenced the research. From the thematic analysis it can be derived that participants from both groups do not fully trust charities. This can be seen in answers similar to "*You never know where the money is going in charities, it can just as well all go the the CEOs. It's my personal policy to decline when people ask for donations.*". It can be disputed whether the research might suffer from a novelty effect. As most charities use an emphatic approach, the novelty of using something else (in this case: a solution-based approach) might have influenced the research. However the analysis does not show any sign of a novelty effect within the research. Despite this fact, it should be researched further in order to significantly confirm the sincerity of this speculation.

Despite the significance in homogeneity of the two groups, the influence of the minimal variety with the study direction of the participants can be disputed. It should be examined whether the participant population is representative for the entire selected target group. The majority of the participants



are studying at the department of Industrial Design, which might not represent the general behaviour of the students of the TU/e.

In the conducted research, there was no significant difference within the donated amount of money between the two groups. However, it can be observed that the participants from group 2 (observant of the solution-based video) generally donated more. The insignificant result can be caused by the outliers present in group 1 (as shown in figure 8). If the research was conducted among a larger group of participants, the outliers can be left out of the research. This makes an interesting possible research direction, possibly resulting in a significant difference improving the value of the conducted research.

### CONCLUSION

Bases on the data gathered during this research ( $n_1 = 21$ ;  $n_2 = 20$ ) and the analyses of this data conclusions can be drawn on the effect of information reframing on charitable behaviour of TU/e students, in relation to the 'nierstichting'. Within to homogeneous groups there is found a significant difference in charitable behaviour between groups. Those who've seen video 2 donated significantly more often than those who've seen video 1. Looking at the average donated amount there was found a difference between groups as well, however this difference is not significant, possibly due to outliers in group 1.

While there is difference in charitable behaviour, both videos are not perceived as intended. Since no significant difference in perceived empathy- or solution-based level between groups was found. Group 1, who saw a video that showed a suffering patient and his children, scored similar to group 2 with respect to empathy level. Furthermore group 2, who saw a video that showed a clear plan and experts, scored similar to group 1 with respect to solution-based level.

Since the videos are interpreted differently than expected the drive for charitable behaviour was not found in this research. However a significant moderate positive correlation between perceived empathy level (measured by the sum of two seven-point-likelihood-scales) and charitable behaviour (measured in selected donation amount in euros) was found. On the contrary there is found a non-significant weak positive correlation between perceived solution-based level (measured by the sum of two seven-point-likelihood-scales) and charitable behaviour (measured in selected donation amount in euros).

Overall it can be concluded that video 2 did lead to more charitable behaviour. However this increase in charitable behaviour is not caused by an increase in solution-based level. Nor does an increase in solution-based level lead to more charitable behaviour. In line with earlier research an increase in empathy level does lead to more charitable

behaviour. However current information framing, showing suffering patients and children, does not succeed in positively influencing this perceived empathy level for TU/e students.

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## APPENDICE A: BACKGROUNDS

**Bart van Dijk Bsc.** – Master Industrial Design, Eindhoven University of Technology

A user centered designer, with a focus on the interaction between human and (personal) smart product. During the process keeps an eye out on the technological feasibility of the concept, playing a key part during the realization of the first iterations of the concept. Early in the process of the conducted research, he focused on the validity of the relevance to design by conducting preliminary research. He cooperatively determined the difference in auditory information framing, and the execution of the research. He wrote parts of the paper, initially communicating the prototype and discussion. Later, he contributed to the unification and insurance of exhaustiveness of the paper, by reviewing and editing parts. At the end of the process, he was responsible for the limited thematic analysis and the completion of the final presentation.

**Myrte van Dongen Bsc.** – Master Industrial Design, Master Innovation Management, Eindhoven University of Technology

An entrepreneurial, communicative designer, with an interest in cognitive sciences and performance management. In relation to this research she focused on the precision of the setup of the lab research approach, that was needed in

order to end up with results useful for meaningful data analysis. This was done by brainstorming about the setup of the research questions and the way in which data was gathered. During the course she played a role in analyzing the results and making sure this was done in an academic way as expected for the lab research approach. Next to this she played a role in explaining to external parties how the research was setup and why the different analyses were executed in a certain way.

**Lianne de Jong Bsc.** – Master Industrial Design, Eindhoven University of Technology

An analytic user-centred designer, characterized by her communicative and organisational skills. During the process often responsible for communicating the conclusions and considerations towards external parties, such as the lecturer. During early discussions she often emphasized the importance of precise formulation within lab research. Consequently she was of major importance in formulating all research questions. Later in the process her main role was in the analyses of the gathered data, since she had pre-knowledge about both descriptive and inferential statistics (acquainted during 'Elementary Statistics for Designers' from Matthias Rauterberg, quarter one '17/'18). Together with Meerthe she defined the appropriate analyses methods in order to answer all research questions. Continuously she focused on statistically proving relations between different variables.

**Mark Rijkers Bsc.** – Master Industrial Design, Eindhoven University of Technology

A digital craftsman, which is fascinated by mathematics and nature. Aiming at designing a seamless connection between humans and (adaptive) systems. He was responsible for the theoretical background, relevance to design and introduction of the paper. In early iterations he played a key part of the hardware part of the vending machine. Cooperatively setting up the research question, determining the different independent, dependent and controlled variables and lastly, conducting the experiment. At the end of the process, he was responsible for the togetherness of the paper.